

**Amendments to and listing of the Claims:**

Please amend the claims as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An Ion mobility spectrometer comprising a reaction zone, a drift zone and an ion detector, characterized by comprising, as ionization element, a corona discharge source (200; 300) consisting of comprising:

- a first chamber (201; 308) provided with an inlet (210; 309) for a gas to be analyzed and with at least one first opening for communication (203; 311) between the internal space defined by said first chamber and the reaction zone of an IMS spectrometer;
- a second chamber (204; 303), contained in said first chamber, provided with an inlet (209; 306) for an ultra-pure gas or a mixture of ultra-pure gases, and with at least one second communication opening (206; 310, 310') between said first and second chambers; and
- a pair of electrodes (207, 208; 304, 302'), at least one of which (207; 304) is needle-shaped, arranged in said second chamber;

said pair of electrodes and second opening being arranged in such geometrical relationship that there is no optical path between the zone of the corona discharge and the ion detector of the IMS instrument.

2. (Currently Amended) The Ion mobility spectrometer according to claim 1, further comprising an electronic circuit allowing to keep maintenance of a constant potential difference between said pair of electrodes.

3. (Currently Amended) The Ion mobility spectrometer according to claim 1, further comprising an electronic circuit allowing to keep maintenance of a constant current between said pair of electrodes.